NATIONAL ACADEMY OF SCIENCES
NATIONAL RESEARCH COUNCIL

DIVISION OF BIOLOGY AND AGRICULTURE

REPORT OF TRAVEL GRANTS TO THE INTERNATIONAL BIOPHYSICS MEETING

Paris, June 22-27, 1964

On recommendation by its Committee on International Relations in Biophysics, the National Academy of Sciences sought funds for travel of U.S. scientists to the International Biophysics Meeting held in Paris, June 22-27, 1964, under the sponsorship of the International Organization for Pure and Applied Biophysics. A total of $68,000 was received from AEC, AFOSR, NASA, NIH, NSF, and ONR. Travel grants were paid to 69 out of 110 applicants.

The Scientific Meetings

The scientific program of the Paris Meeting included (a) extremely valuable lectures presenting the background and current status of five active branches of biophysics and (b) symposia organized by two special commissions of IOPAB, on Cell and Membrane Biophysics, and on the Biophysics of Communication and Control Processes. The Plenary Sessions were planned by the French Organizing Committee and held at the new Faculty of Medicine in Paris; the Symposia were held at the Orsay Center of the Faculty of Sciences, about 20 miles from Paris. The names of invited speakers and the titles of their papers are shown in App. A.

About 600 participants from 23 countries attended the Meetings. In its discussions the Council of IOPAB had considered various types of meetings and concluded that, whereas international congresses are desirable, there should be intermediate size meetings to provide an opportunity for specialists to discuss their research problems and experiments, while permitting a number of other scientists to attend as auditors. It decided that this meeting should not be an open congress and to experiment with a different format: Topics and speakers at the symposia were pre-selected by the relevant Commission, with participation in the discussion open to all those present within the limits of space available.

On the final afternoon, a series of six papers on education in biophysics outlined current programs and problems of instruction leading to degrees in biophysics in various countries.

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It had been decided not to provide for publication of papers presented at the Meeting. Any or all papers may, however, be published through regular channels.

The General Assembly

The Second General Assembly of the International Organization for Pure and Applied Biophysics met on the afternoon of June 23, 1964. It was attended by 34 delegates of the 24 national organizations and of the existing 3 Special Commissions (see App. B). The following actions were taken:

1. Ratification of 24 adhering organizations (App. C)
2. Ratification of 3 special commissions and their membership (App. D)
3. Authorization for the Council to establish a Special Commission on Radiation Biophysics
4. Appointment of an ad hoc Committee on Educational Studies, composed of M. Kotani, Japan, and F. Hutchinson, USA, with authority to co-opt additional members
5. Acceptance of the International Organization for Medical Physics and the Institute of Electrical and Electronics Engineers as Affiliated Commissions of IOPAB
6. Authorization for the Council to initiate application for membership of IOPAB in the International Council of Scientific Unions
7. The question of open versus restricted meetings was extensively discussed. It was generally agreed that special commissions, being essentially autonomous, could plan open or closed meetings as they wish. The Assembly also favored international congresses consisting of both short, contributed papers and educational symposia by invited speakers on topics of more general interest
8. The Assembly accepted the invitation of the Austrian Society for Pure and Applied Biophysics to hold the Second International Biophysics Congress in Vienna in the first part of September 1966. This will be an open meeting of the Conventional type
9. Election of 6 new members of the council and re-election of 10 members including the 3 U.S. members (App. E).

The International Organization for Pure and Applied Biophysics (IOPAB)

IOPAB was formed on the occasion of the first International Biophysics Congress, held in Stockholm, July 30-Aug. 4, 1961, when representatives from 26 nations accepted its statutes and signified their intention to adhere. At this first General Assembly the Council was authorized to establish special commissions on Molecular Biophysics, Cell and Membrane Biophysics, and Biophysics of Communication and Control Processes.

The Commission on Molecular Biophysics co-sponsored the Cold Spring Harbor Symposium on Synthesis and Structure of Macromolecules, June 7-13, 1963. It plans a Second Symposium, on Some Biological Systems at the Molecular Level, to be held

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at Naples, September 8-11, 1965.

After its symposia at the Paris Meeting the Commission on the Biophysics of Communication and Control Processes is looking into the possibility of holding international meetings on information processing in collaboration with the International Unions of Physiological Sciences and of Biochemistry, possibly in connection with the Vienna Congress in 1966.

The activities of the Commission on Cell and Membrane Biophysics will in 1965 and 1966 be confined to the planning of a symposium to be held during the Biophysics Congress in Vienna in 1966, and to the organization of a three-day discussion meeting, strictly limited to 50 people, to be held immediately after the Vienna Congress.

U.S. Participation in IOPAB

The National Academy of Sciences ratified its adherence to IOPAB in December 1961, and authorized its ad hoc Committee on International Relations in Biophysics (App. F) to function ad interim until a U.S. National Committee for Pure and Applied Biophysics was formed. While framing a Constitution for a U.S. National Committee, comparable to those existing for U.S. National Committees of other international organizations to which the Academy adheres (App. G) and pending formation of the new Committee, the ad hoc Committee actively participated in the planning of the Paris Symposia and prepared U.S. participation therein.

The U.S. National Committee for Pure and Applied Biophysics (App. H) held its first meeting on April 11, 1964. It discussed plans for the forthcoming meetings and for U.S. participation in the General Assembly. At the Committee's recommendation the President of the Academy appointed Thomas F. Anderson (Chairman), Walter A. Rosenblith, and Robley C. Williams delegates to the Second General Assembly of IOPAB.

Award of Travel Grants to the International Biophysics Meeting

Announcement of the travel grant program was sent to the following journals and societies in January 1964:

AIBS Bulletin
John Olive

Biophysical Journal
J. L. Oncley

Chemical & Engineering News
Richard L. Kenyon

Radiation Research
Titus C. Evans

The Institute of Electrical & Electronics Engineers, Inc.
Richard M. Emberson

American Physical Society
John H. Williams
Robert F. Bacher

American Physiological Society
Hermann Rahn

Biophysical Society
William Sleator

Physics Today
Robert R. Davis

Science
Philip Abelson

Science News Letter
Watson Davis

Electron Microscope Society of America
Sydney S. Breese, Jr.

Health Physics Society
William T. Ham, Jr.

Instrument Society of America
Herbert S. Kindler

Radiation Research Society
A. O. Allen

Society of Nuclear Medicine, Inc.
Thad P. Sears, M.D.

The deadline for receipt of applications (App. I) was March 15.

As recommended by the ad hoc Committee the following were appointed to select candidates eligible to receive a travel grant to the Meeting:

	Nominated by:
Dr. Fred M. Snell (Chairman) University of Buffalo School of Medicine	The Biophysical Society
Dr. James D. Hardy Yale University	American Physiological Society
Dr. Richard B. Roberts Carnegie Institute of Washington	American Institute of Physics
Dr. Richard B. Setlow Oak Ridge National Laboratory	Radiation Research Society
Dr. Herman P. Schwan University of Pennsylvania	The Institute of Electrical & Electronics Engineers
Dr. Robert E. Taylor National Institute of Neurological Diseases & Blindness	The Biophysical Society

This Committee met in Chicago on February 26, 1964, to plan its program and hear reports by Drs. Solomon and Williams on background and preparations for the Paris Meetings. The opinion of the ad hoc Committee, that members of the Selection Committee should consider themselves eligible to apply for a travel grant, was transmitted.

It was agreed that priority should be given invited speakers who applied for travel funds.

The possibility of awarding grants on the basis of reduced-rate fares was considered but not adopted because of incompatible dates.

Maximum grants therefore included jet-economy round-trip air-fare from point of origin to Paris, plus $100 for expenses. Awardees were urged to travel by American carriers.

On March 18 a complete set of the 110 applications received was sent to each member of the Selection Committee for preliminary evaluation. Of these, 73 applicants wished to attend the sessions on cell and membrane biophysics, and 44 those on the biophysics of communication and control processes. Thirty-four wished to attend sessions of both Commissions.

From the preliminary ratings of each member of the Committee a composite rank-order list was established, which served as a basis for discussion.

At its meeting at the Academy on March 28-29, the Committee decided to award funds to the 47 candidates who received an average score of 1.0 through 1.3, including 19 invited speakers, and to reject the 23 candidates whose average score was 2.0 and above. After discussion of each of the intermediate 40 candidates, 25 were accepted, 6 were chosen alternates, and 9 were rejected. Nine awardees subsequently cancelled their plans to attend.

Ultimately, 69 partial or total travel grants were paid from funds provided by AEC, AFOSR, NIH and NSF. Those selected are shown in App. . Most related administrative costs including travel expenses of the Selection Committee and of U.S. officers to the IOPAB business meetings, were defrayed from funds provided by ONR and NASA.

INTERNATIONAL ORGANIZATION FOR PURE AND APPLIED BIOPHYSICS

PARIS, ORSAY
June 22-27, 1964

SCIENTIFIC PROGRAM

PLENARY SESSIONS
FACULTY OF MEDICINE
45, Rue des Saint-Peres

M. F. PERUTZ, Cambridge, England
Structure and function of Haemoglobin

J. MONOD, Paris, France
Sur le role fonctionnel de la symetrie moleculaire dans les transitions allosteriques

B. PULLMAN, Paris, France
Aspects de la structure electronique des acides nucleiques

A. L. HODGKIN, Cambridge, England
Recent experiments with giant nerve fibres

J. DUCHESNE, Liege, Belgium
Origine de la radio-resistance des proteines et des acides nucleiques

FACULTY OF SCIENCES

ORSAY (Seine et Oise)

COMMISSION ON CELL AND MEMBRANE BIOPHYSICS

B I

MEMBRANE AND PHASE BOUNDARY PHENOMENA: Chairman: A. M. MONNIER

T. TEORELL, Sweden, (Uppsala)
Unstable phenomena in membranes

L. GOUGEROT, Paris, France
Quelques proprietes des modeles electrochimiques n'ayant pas encore leur equivalent en biologie

A. MAURO, New York, N.Y. USA
Rectification in the junction of a positive and negative fixed charge membrane

J. GUASTALLA, Montpellier, France
Sur quelques types de piles a phases liquides

A.D. BANGHAM, Cambridge, England
The ionic permeability and physical behavior of phospholipid membranes

T. E. THOMPSON, Baltimore, Maryland, USA
Some physical properties of lipid bilayer membranes

V. LUZATTI and F. REISS-HUSSON, Gif/Yvette, France
Polymorphisme de quelques systemes modeles contenant des lipides et son rapport avec la structure des membranes biologiques

H. MEVES, Hamburg, F. R. Germany
Ionic selectivity in perfused giant axons

P. G. KOSTYUK, V. D. Gerassimov, V. A. Mayski, Kiev, USSR
Ionic processes at the surface membrane of giant nerve cells

R. VILLEGAS and G. VILLEGAS, Caracas, Venezuela
Recent advances on the study of the nerve fibre surface

B II

MOLECULAR BIOPHYSICS OF INTRACELLULAR MEMBRANE SYSTEMS: Pres: A. KATCHALSKY

A. L. LEHNINGER, Baltimore, Maryland, USA
Directionality of energy coupling processes in the mitochondrial membrane

W. STOECKENIUS, (The Rockefeller Institute) New York, USA
The fine structure of intracellular membranes

J. Th. G. OVERBEECK, Utrecht, Netherlands
Molecular and ionic forces in membranes

A.A. LEV, Leningrad, USSR
Determination of potassium and sodium ions activity and activity coefficients in frog muscle fibres and in some models solutions of polyelectrolytes

V. P. WHITTAKER, Cambridge, U.K.
The isolation and properties of synaptic vesicles

F. K. SNELL and T. CHOWDHURY, Buffalo, New York, USA
Intracellular potentials of frog skin and toad bladder

S. V. KONEV, V. D. BOBROVICH, I.I. LYSKOVA, USSR
The electronic excitation state of proteins of intercellular structures (mitochondria and their lamellae nuclei)

B III

EXCITATION CONTRACTION COUPLING: President R. D. KEYNES

L. D. PEACHEY, New York, USA
Electron microscopy in exitation contraction coupling studies

A. F. HUXLEY, London, England
Local activation and tubular structures in crab-muscle

R. H. ADRIAN, Cambridge, England
Activation of contraction and the electrical properties of muscle membranes

H. Ch. LÜTTGAU, Berne, Switzerland
Action potentials and isometric tension of isolated twitch muscles fibres during and after stimulation with high frequencies

G. B. FRANK, Lund, Sweden
An essential role for calcium in excitation-contraction coupling

N. A. GABELOVA, Moscow, USSR
Contractibility of thick filaments and its possible role in the mechanism of contraction

A. SANDOW, New York, N.Y. USA
Electrochemical correlations in excitation-contraction coupling

W. HASSELBACH, Heidelberg (F. R. Germany)
Ca++ uptake by fragments of the sarcoplasmatic reticulum and its dependence on ATP splitting

S. EBASCHI, Tokio, Japan
Calcium binding of sarcoplasmic reticulum and excitation-contraction coupling

A. M. WEBER, R. HERTZ and I. REISS, Gif/Yvette, France
The dependence of muscular activity on Ca

B IV

CELLULAR CONTRACTILITY AND PROTOPLASMIC MOVEMENTS: President: D. MAZIA

J. L. KAVANAU, Los Angeles, California
On the evolution and transformations of contractile elements

E. J. AMBROSE, London, England
An electroosmotic theory of protoplasmic movements

R. J. GOLDACRE, London, England
The cell membrane as an active organelle

V. I. VOROBIEV, L. Sh. GANELINA and L. V. KUKHAREVA, Leningrad, USSR
Mechanochemical phenomena in biological macromelecules with ordered secondary structure

P. WEISS and A.C. TAYLOR, New York (The Rockefeller Institute) USA
The surface of free isolated cells in action

R.C. BUCK and A. KRISHAN, London, Ontario, Canada
The plasma membrane in cytokinesis

L. G. E. BELL, London, England
Internal membranes in the division of cells

D. MAZIA, Berkeley, California, USA
The role of intracellular membranes in mitotic cell division

B V

TRANSPORT ACROSS CELL MEMBRANES - I) ION TRANSPORT: President F. MOREL

H. PASSOW, Hamburg, F.R. Germany
Passive ion permeability

I. M. GLYNN, Cambridge, England
Transport adenosine-triphosphatase

H.H. USSING, Copenhague, Denmark
Ion transports in the frog skin epithelium

P. F. CURRAN and G. W. KIDDER, Boston, Massachusetts, USA
Relationships between acid secretion and electron transport in frog gastric mucosa

J. F. HOFFMAN, Bethesda, Maryland, USA
Special separation of membrane transport pathways in red blood cells

P. HOROWICZ, Durham, North Carolina, USA
Sodium movements in muscle fibers of the frog

A. KLEINZELLER, Prague, Czechoslovakia
A mechanism governing the water content of the cell

G. WITTEMBURY, London, England
Sodium for potassium exchange in kidney cells

K. J. ULLRICH, G. RUMRICH, A FRICK and W.E. LASSITER, Berlin, F.R. Germany
Calcium: renal tubular transport and influence on water permeability in proximal and distal convolution

H. YOSHIMURA, Kyto, Japan
Mechanisms of water and ion transport through bloodsaliva barrier

B VI

TRANSPORT ACROSS CELL MEMBRANES. II) ORGANIC MOLECULES: President: A. KEPES

E. HEINZ, J. BITTNER and K. RING, Frankfurt, F. R.
Transport of amino-acides into cells

R. K. CRANE, Chicago, Illinois, USA
Possible interrelationships of membrane functions as reflected in active transport of sugars

A. KEPES, M. VALLEE and J. P. VEILLAT, Paris, France
Permeases bacteriennes

D. H. SMYTH, Sheffield, England
Some complicating factors in membrane kinetics

S. G. SCHULTZ and R. ZALUSKY, Brooks Air Force Base, Texas
Interaction between active sugar and amino acid transport and active sodium transport in rabbit ileum

A. KOTYK, Prague, Czechoslovakia
Character of the sugar carrier in different cells

E. ENGLESBERG, Pittsburgh, Pennsylvania, USA
The glucose permease system in bacteria and the energie sensitive exit reaction

F. WIDDAS, London, England
The effect of temperature on the parameters of glucose transfer in human erythrocytes and in the erythrocytes of feotal guinea pig

R. I. WEED, J. van STEVENINCK and A. ROTHSTEIN, Rochester, N.Y., USA
Membrane sulfhydryl and sugar transport in the red cell

A.A. VERENINOV, S. A. A. KROLENKO, Leningrad, USSR
N.N. NIKILSKY and D. L. ROSENTAL, Leningrad, USSR
Distribution of vital dyes between axons of cephalopoda and the media

COMMISSION ON THE BIOPHYSICS OF COMMUNICATION AND CONTROL PROCESSES

C I

CODING AND SENSORY MECHANISMS. I) President: A. FESSARD

G. von BEKESY, Cambridge, Massachusetts, USA
The role of inhibition in sensory biophysics

J. A. B. GRAY, London, England
Impulse patterns in a population of receptor units

D. H.HUBEL AND T. N. WIESEL, Boston, Massachusetts, USA
Transformations of visual messages beyond striate cortex in the cat

D. OTTOSON, Stockholm, Sweden
Osmotic effects on the isolated muscle spindle

O. D. CREUTZFELDT, H. D. LUX, A. C. NACIMIENTO and S. WATANABE

Biophysical properties and postsynaptic potentials of cortical nerve cells

C II

REGULATORY MECHANISMS IN MULTICOMPONENT SYSTEMS: President: W.A. ROSENBLITH

I.M. GELFAND, V. S. GURFINKEL, S.V. FOMIN, M. L. ZETLIN and M. L. SHICK
A study of motor activity control in man

R. A. CHASE, J. K. CULLENGER and S.A. SULLIVAN
Experimental studies on the mechanisms of abnormal movements in man

A. HUGELIN, France
Adaptation motrice dans la veille et le sommeil. Role d'une memoire cyclique tampon dans la selection sequentielle des informations

L. STARK, Cambridge, Massachusetts, USA
Control system for human motor coordination

D. BARGETON
Role de PACO2 dans la regulation de la respiration etudiee en regime periodique

G. SZEKELY, Cambridge, USA
Logical network for controlling limb movements in Urodela

J. H. MILSUM , Montreal, Canada
Neuro-muscular systems and their adaptive control

M. CORDA, G. EKLUND, C. v. EULER and G. LENNERSTRAND, Sweden
Proprioceptive control of respiratory movements

C III

CODING AND SENSORY MECHANISMS. II) President: Y KATSUKI

T. TOMITA, Tokyo, Japan
Mechanisms subserving color coding in the vertebrate retina

H. R. MATURANA, Santiago, Chili
Chromatic configuration and colour vision in the pigeon

T. N. WIESEL and D. H. HUBEL, Boston, Massachusetts, USA
Interrelation of form and color in lateral geniculate cells in the Rhesus macaque

K. MOTOKAWA, Sendal, Japan
Transmission of information along the visual pathways

O. J. GRÜSSER, Berlin
Transmission and processing of information in the cat's afferent visual systems (a.v.s.)

C IV

CODING AND NEURAL NOISE, President W. REICHARDT

A.A. VERVEEN and H.E. DERKSEN, Amsterdam, Netherlands
Fluctuations in excitability and in membrane potential

W. M. SIEBERT, Cambridge, Massachusetts, USA
Some implications of the stochastic behavior of primary auditory neurons

H. B. BARLOW, Berkeley, California
Visual noise and dark adaptation

T. F. WEISS, Cambridge, Massachusetts, USA
Remarks on a probabilistic model of the peripheral auditory system

M. GOLDSTEIN, Baltimore, Maryland, USA
Studies of facilitation and inhibition in the visual pathways by means of test shocks

C V

ACOUSTIC COMMUNICATION: President: R. G. BUSNEL

B. DUMORTIER, Jouy-en-Josas (Seine et Oise) France
Modele logique pour les comportements lies aux stimuli acoustiques chez les insectes

W. D. KEIDEL, Nuremberg, Germany
Biophysical aspects of auditory information processing

J.D. PYE, London, England
Les theories physiques des systemes d'auto-informations acoustiques

L.S. FRISHKOPF and R.R.CAPRANICA
Peripheral auditory coding as a basis of mating call detection in the bullfrog

C VI

MATHEMATICAL MODELS: President: A. M. UTTLEY

L. STARK, Cambridge, Massachusetts, USA
Principles of neurological feedback control systems

I. M. GELFAND and M. L. ZETLIN, Moscow, USSR
On the mathematical modelling of the mechanisms of the central nervous system

L. HARMON, Murray Hill, New Jersey, USA
Some functional consequences of inhibitory time-courses in neural models

J. R. ULLMANN,
Parallel recognition of line characters

M. GOODALL, Cambridge, Massachusetts, USA
Problem of higher functions in the brain

C VII

INTER AND INTRA-CELLULAR MECHANISMS OF COMMUNICATION AND CONTROL: Pres. G. M. FRANK

N. A. ALADJALOVA, Moscow, USSR
Physical and chemical mechanisms of the regulation of connections in the ensemble of neurons and the memory model

G. DETCHEV, Bulgaria
Optimal autoregulation of cellular metabolic processes

C VIII

LATERAL INHIBITION: President W. REICHARDT

K. KIRSCHFELD and W. REICHARDT, Tübingen, Germany
The processing of optical information from stationary patterns by the complex eye of Limulus

G. G. DEMIRCHOGLYAN
Electroscopic study of photoreceptor systems using computer technique

EDUCATION IN BIOPHYSICS: President: M. KOTANI

H. O. HORSTFEHR, Italy
The problem of language

V. VASILESCO
La place occupee par la Biophysique dans l'enseignement medical contemporain

S. A. TALBOT, Baltimore, Maryland, USA
Organization of higher biosystems for graduate students

K. IMAHORI, M. KOTANI, Tokyo, Japan
Present situation and future planning of biophysics in Japan

F. HUTCHINSON, New Haven, Connecticut, USA
Biophysics education

M. TUBIANA, Paris
Enseignement de la Biophysique dans les Facultes de Medecine

INTERNATIONAL ORGANIZATION FOR PURE AND APPLIED BIOPHYSICS

Second General Assembly

Paris, June 23, 1964

Official Delegates

(*Absent)

Argentine
1. Antonio S. Frumento

Austria
1. Hans Bornschein

Belgium
1. J. Duchesne

Brazil
(no single delegate named)

Canada
1. J.H. Milsum

Republic of China (Taiwan)
1. Paul Or-pong Ta'o

Czechoslovakia
1. F. Herčík (represented by A. Kleinzeller)

Denmark
1. Fritz Buchthal

France
1. A.M. Monnier
* 2. Ch. Sadron
3. J. Tonnelat

Germany
Deutsche Gesellschaft für Biophysik
1. B. Rajewsky
2. H. Muth
3. H. Pauly

German Academy of Sciences at Berlin
1. J. Segal

Hungary
1. E. Ernst

India
1. A.R. Gopal Ayengar

Israel
1. A. Oplatka

Japan
1. M. Kotani
2. K. Imahori

The Netherlands
1. A.J.H. Vendrick

Norway
1. Per Anderson

Rumania
* 1. Vasile Vasilescu

Sweden
1. T. Teorell

Switzerland
1. W. Arber

U.S.S.R.
1. G. Frank
2. P.G. Kostyuk
3. M. A. Gabelova

United Kingdom
* 1. Sir John Randall
2. R.D. Keynes
3. C.W. Gilbert

U.S.A.
1. Thomas F. Anderson
2. Walter A. Rosenblith
3. Robley C. Williams

Venezuela
1. R. Villegas

Delegates of Commissions:

Molecular Biophysics	Dr. John C. Kendrew
Cell & Membrane Biophysics	Dr. A. Kleinzeller
Biophysics of Communication & Control Processes	Dr. Werner Reichardt

APPENDIX C

INTERNATIONAL ORGANIZATION FOR PURE AND APPLIED BIOPHYSICS

NATIONAL ADHERING ORGANIZATIONS

1964

Country	Adhering Organization
Argentina	Sociedad Argentina de Biofisica
Austria	Austrian Society for Pure and Applied Biophysics
Belgium	Comite National Belge de Biophysique
Brazil	Societa Brazileira de Biofisica
Canada	National Research Council
China (Taiwan)	Academia Sinica of the Republic of China
Czechoslovakia	Biophysical Society of the Czechoslovak Academy of Sciences
Denmark	Royal Danish Academy of Sciences and Letters
France	Societe de Chimie Physique
Germany	Deutsche Gesellschaft für Biophysik E. V. German Academy of Sciences at Berlin
Hungary	Hungarian Biophysical Society
India	Department of Atomic Energy (Government of India)
Israel	Israel Academy of Sciences and Humanities
Japan	Science Council of Japan
The Netherlands	Stichting voor Biofysica
Norway	Norwegian Academy of Sciences and Letters
Rumania	Section of Biophysics of the Rumanian Peoples Republic
Sweden	Biofysikaliska Nämnden
Switzerland	Swiss Academy of Sciences
U.S.S.R	Academy of Sciences of the U.S.S.R.
United Kingdom	The Royal Society
United States	National Academy of Sciences/National Research Council
Venezuela	Comite Venezolano de Biofisica

INTERNATIONAL ORGANIZATION FOR PURE AND APPLIED BIOPHYSICS

List of Commission Members:

a) **Commission on Cell and Membrane Biophysics**

Dr. Richard D. Keynes, President (U.K.)
Dr. Aharon Katchalsky (Israel)
Dr. A. Kleinzeller (Czechoslovakia)
Dr. Daniel Mazia (U.S.A.)
Dr. A.M. Monnier (France)
Dr. A.K. Solomon (U.S.A.)
Dr. Torsten Teorell (Sweden)
Dr. A.S. Troshin (USSR)
Dr. H.H. Ussing (Denmark)
Dr. W. Wilbrandt (Switzerland)
Dr. Albert Lehninger (U.S.A.) (Liaison Member with IUB)

b) Commission on the Biophysics of Communication and Control Processes

Dr. Walter Rosenblith, (USA) Chairman
Dr. G. Frank, (USSR)
Dr. A. Fessard (France)
Dr. S.V. Fomin (USSR)
Dr. Y. Katsuki (Japan)
Dr. W. Reichardt (F.R.Germany) Secretary
Dr. S.S. Stevens (USA)
Dr. A.N. Uttley (U.K.)
Dr. A.J.H. Vendrik (Netherlands)
Dr. Curt von Euler (Sweden)
Prof. J.W. Duyff (Netherlands)(Liaison Member with IUPS)

c) Commission on Molecular Biophysics

Dr. Robley C. Williams, Chairman
Dr. T.F. Anderson, (USA)
Dr. W. Arber (Switzerland)
Dr. J.A.V. Butler (U.K.) Secretary
Dr. A. Buzzati-Traverso (Italy)
Dr. A. Engström (Sweden)
Dr. A. Gierer (F.R. Germany)
Dr. F. Hercik (Czechoslovakia)
Dr. O. Maaløe (Denmark)
Dr. Gerhardt Schramm (F.R. Germany) (Liaison member with IUB)
Dr. A. S. Spirin (USSR)
Dr. Itahru Watanabe (Japan)
Dr. M.H.F. Wilkins(U.K.)

APPENDIX E

INTERNATIONAL ORGANIZATION FOR PURE AND APPLIED BIOPHYSICS

COUNCIL
1964-1967

President:	Prof. A. Katchalsky	Polymer Department Weizman Institute of Science Rehovot, Israel
Vice-President:	Prof. John C. Kendrew	MRC Laboratory of Molecular Biology University of Cambridge Cambridge, England
Honorary Vice-President:	Prof. A. Engström	Department of Medical Physics Karolinska Institutet Stockholm 60, Sweden
Secretary General:	Prof. A.K. Solomon	Biophysics Laboratory Harvard Medical School Boston 15, Mass.

Prof. F. Buchthal
Institute of Neurophysiology
University of Copenhagen
Copenhagen, Denmark

Prof. E. Ernst
Biophysical Institute
University of Pécs
Pécs, Hungary

Prof. G.M. Frank
Biological Department
Academy of Sciences of USSR
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Moscow B. 133, USSR

Dr. A.R. Gopal-Ayengar
Biology & Medical Divisions
Atomic Energy Establishment, Trombay
Richardson & Cruddas Building
Byculla, Bombay 12, India

Prof. R.D. Keynes
ARC Institute of Animal Physiology
Babraham Hall
Cambridge, Great Britain

Prof. Masao Kotani
Department of Physics, Faculty of Science
University of Tokyo, Bunkio-ku
Tokyo, Japan

Prof. P.G. Kostyuk
Institute of Animal Physiology
Kiev State University
Kiev, USSR

Prof. A.M. Monnier
Laboratoire de Physiologie Generale
Sorbonne, Paris 5e, France

Prof. Walter A. Rosenblith
Department of Electrical Engineering
Massachusetts Institute of Technology
Cambridge, Mass.

Prof. T. Teorell
Institute of Physiology
University of Upsala
Upsala, Sweden

Prof. A.J. H. Vendrik
Department of Medical Physics of R.C. Univ
Kapittelweg 40
Nijmegen, Netherlands

Prof. Robley C. Williams
Virus Laboratory
University of California
Berkeley, California

APPENDIX F

NAS-NRC AD HOC COMMITTEE ON INTERNATIONAL RELATIONS IN BIOPHYSICS

MEMBERS

Dr. Arthur K. Solomon, CHAIRMAN
Biophysical Laboratory
Harvard Medical School
Boston 15, Massachusetts
LO 6-3057

Dr. Frank Brink, Jr.
The Rockefeller Institute
New York 21, N.Y.
LE 5-9000

Dr. Kenneth S. Cole
National Institutes of Health
Bethesda 14, Maryland
179/3204 WO 3-1110

Dr. Alexander Hollaender
Director, Biology Division
Oak Ridge National Laboratory
Post Office Box Y
Oak Ridge, Tennessee
LD 220 x 7137

Dr. Urner Liddel
Chief of Sciences
Lunar and Planetary Program
Office of Space Sciences
National Aeronautics & Space
Administration
Washington 25, D.C.

Prof. Walter A. Rosenblith
Department of Electrical Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts
UN 4-6900

Dr. Robley C. Williams
Virus Laboratory
University of California
Berkeley 4, California
TH 5-6000 x 2237

NATIONAL ACADEMY OF SCIENCES - NATIONAL RESEARCH COUNCIL

CONSTITUTION

of the

UNITED STATES NATIONAL COMMITTEE FOR PURE AND APPLIED BIOPHYSICS

1. Purpose:

a. To enable biophysicists of the United States to participate in the activities of the International Organization for Pure and Applied Biophysics (IOPAB) through the National Academy of Sciences - National Research Council (NAS-NRC), the body adherent to IOPAB on behalf of the United States.

b. To advise the President of the National Academy of Sciences on matters relating to participation of United States scientists in international matters concerning pure and applied biophysics.

c. To perform in the United States the functions of a National Committee of Biophysics as described in the Statutes of IOPAB, including facilitation of cooperation among the national societies that represent the interests of Biophysics.

2. Membership:

a. Composition: The Committee shall be composed of the following voting members:

(1) Three members chosen from nominations by the Biophysical Society and three members chosen from nominations by other national societies. All members will be expected to promote the interests of the entire field of pure and applied biophysics and not to represent the particular interests of the specific societies which have nominated them;

(2) Two members-at-large who are chosen to insure broad representation of all the fields of biophysics on the Committee, but who are not necessarily nominees of national societies;

(3) Ex officio: Those U.S. members of the Council of IOPAB not chosen according to paragraphs (1) and (2) above, the Chairmen of the Division of Biology and Agriculture and of the Division of Physical Sciences, and the Foreign Secretary.

b. Nominations: The Chairman of the Division of Biology and Agriculture of the National Research Council shall annually invite (1) the Biophysical Society to submit about five nominations, and (2) other national societies in the field of pure and applied biophysics each to submit one or two nominations for membership on the Committee.

c. Appointment: The Chairman of the Division of Biology and Agriculture shall, after consultation with the Committee, provisionally select members of the Committee. In concurrence with the Chairman of the Division of Physical Sciences he shall submit to the President of the National Academy of Sciences the list of proposed members for appointment to the Committee.

d. Term of Office: Members shall be appointed for three-year terms so arranged that approximately one-third of the members are replaced each year. Terms begin on July 1 of the year for which appointed. Continuous membership is limited to two consecutive terms, except for those whose membership on the Committee arises from their membership on the Council of IOPAB.

If a member is unable to complete his term, a successor shall be appointed for the remainder of the term by the Chairman of the Division of Biology and Agriculture in consultation with the Chairman of the Committee. The chosen successor may subsequently be appointed for a full term.

3. Officers:

The Committee shall by election propose a Chairman and a Vice Chairman to be appointed to this office for three-year terms by the President of the National Academy of Sciences, upon recommendation by the Chairman of the Division of Biology and Agriculture. A member of the Committee appointed for two consecutive terms may serve as Chairman or Vice Chairman for both terms.

4. Meetings:

At least one meeting of the Committee shall be held each year upon call of the Chairman. Officers and staff of NAS-NRC may be invited to each meeting. Representatives of U.S. Government agencies may be invited when their attendance appears appropriate. The Committee will report its recommendations and actions to the Governing Board of the National Academy of Sciences - National Research Council through the Chairman of the Division of Biology and Agriculture.

5. Quorum:

Five members shall constitute a quorum for the transaction of business.

6. Finances:

Funds for the activities of the Committee shall be obtained and administered in accordance with the policies and procedures of the National Academy of Sciences.

7. Amendments:

This Constitution may be amended by a majority vote of the members of the Committee subject to approval by the Division of Biology and Agriculture with the concurrence of the Division of Physical Sciences and by the Governing Board of the National Academy of Sciences.

U.S. NATIONAL COMMITTEE FOR PURE AND APPLIED BIOPHYSICS

MEMBERSHIP

Term ending June 30

Dr. Thomas F. Anderson, Chairman — 1967
Professor and Senio Member
Institute for Cancer Research
Philadelphia, Pennsylvania 19111

Dr. Max A. Lauffer, Jr., Vice-Chairman — 1965
Professor of Biophysics
Division of Natural Sciences
University of Pittsburgh
Pittsburgh, Pennsylvania 15213

Ex officio:

Dr. A.K. Solomon
Professor of Biophysics
Biophysical Laboratory
Harvard Medical School
Boston, Massachusetts 02115
(Member of the Council and Secretary General, IOPAB)

Prof. Walter A. Rosenblith
Professor of Communications Biophysics
Department of Electrical Engineering
Massachusetts Institute of Techology
Cambridge, Massachusetts 02139
(Member of the Council, IOPAB)

Dr. Robley C. Williams
Professor of Virology
Department of Molecular Biology
University of California
Berkeley, California 94720
(Member of the Council, IOPAB)

Term ending Jan. 30

Dr. Alexander Rich — 1966
Professor of Biophysics
Department of Biology
Massachusetts Institute of Technology
Cambridge, Massachusetts 03139

Dr. Robert L. Schoenfeld — 1965
Professor of Electronic Engineering
The Rockefeller Institute
New York, New York 10021

Dr. Warren K. Sinclair — 1965
Senior Biophysicist
Argonne National Laboratory
97000 S. Cass Avenue
Argonne, Illinois 60440

Dr. A. C. Young — 1967
Prof. of Physiology & Biophysics
University of Washington
Seattle, Washington 98105

Dr. Raymond E. Zirkle — 1966
Professor and Chairman
Department of Biophysics
University of Chicago
5640 S. Ellis Avenue
Chicago, Illinois 60637

Dr. Edward Ford MacNichol, Jr. — 1967
Professor of Biophysics
Johns Hopkins University
Baltimore, Maryland 21218

November 1964

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

APPLICATION FOR TRAVEL GRANT to the INTERNATIONAL BIOPHYSICS MEETING

Paris, 22-27 June 1964

Submit 7 typewritten copies not later than 15 March 1964, in the enclosed envelope

1. Full Name of Applicant — 2. Age
   underscore surname

3. Department — 4. Institution

5. Address of Institution

6. Mailing address during period 1 April-1 July 1964 if different from above

7. Education—Degrees and Institution

8. Experience—recent major positions held

9. Professional Societies—related to Biophysics

10. Publications—titles and references of no more than 3 publications pertinent to Biophysics

11. Have you been invited to participate in the Meeting? In what capacity?

12. Do you plan to take part in the meetings
    a) on Cell and Membrane Biophysics? ☐ yes ☐ no
    b) on Communication and Control Biophysics? ☐ yes ☐ no

13. What other contacts or visits do you intend to make? What relationship will they have to your own research or scientific interests?

Name of Applicant:
underscore surname

14. List the last four trips you have made outside of North America to attend scientific meetings and give amount and sources of travel support

15. How much total support do you need for all scientific purposes of your trip?

16. How much support are you requesting in this application? Calculations of transportation expense should be based on economy class fares including jet

17. From what other sources and in what amounts can you obtain other support for this trip?

18. Other pertinent information

You will be responsible for your travel and other arrangements—passports, visas, hotel reservations, etc.

Applicant's signature Date

Mail to: Committee on International Relations in Biophysics, Division of Biology and Agriculture, NAS–NRC, 2101 Constitution Avenue, Washington, D. C. 20418

INTERNATIONAL BIOPHYSICS MEETING

Paris, June 22-27, 1964

Partial or Total Travel Grants Awarded

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 TO 75	NIH GM 12257-01
W. Watson ALBERTS Dept. of Neurosurgery Mt. Zion Hospital & Medical Center San Francisco, California				X
Alan Robert ADOLPH Bolt Beranek & Newman Cambridge, Massachusetts				X
Robert Day ALLEN Princeton University Dept. of Biology Princeton, New Jersey	X			
William McDermott ARMSTRONG Dept. of Physiology Indiana University School of Medicine Indianapolis, Indiana		X		
Ernst O. ATTINGER Research Institute Presbyterian Hospital Philadelphia, Pennsylvania				X

Name of Grantee	AEC AT(49-9) - 2509	AF 9777-03	NSF C310 T075	NIH GM 12257-01
Octo BARNETT Cancelled Peter Bent Brigham Hospital Harvard Medical School Boston, Massachusetts				
Horace B. BARLOW Department of Optometry University of California School of Optometry Berkeley, California	X			
Ronald Joseph BASKIN Dept. of Biology Rensselaer Polytechnic Inst. Troy, New York	X			
Georg von BEKESY Laboratory of Psychophysics Harvard University Cambridge, Massachusetts			X	
John W. Clyde BIRD Rutgers - The State University Dept. of Physiology & Biochemistry New Brunswick, New Jersey				X
Jacob Joseph BLUM Dept. of Physiology Duke University Durham, North Carolina				X
Louis Lester BOYARSKY Department of Physiology & Biophysics University of Kentucky Lexington, Kentucky	X			
Richard Allen CHASE Department of Psychiatry The Johns Hopkins University School of Medicine Baltimore, Maryland				X

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 TO 75	NIH GM 12257-01
Eugene Henry COTA-ROBLES Division of Life Sciences University of California Riverside, California				X
Robert K. CRANE Dept. of Biochemistry The Chicago Medical School Institute for Medical Research Chicago, Illinois	X			
Peter Ferguson CURRAN Biophysical Laboratory Harvard Medical School Boston, Massachusetts	X			
Murray EDEN Dept. of Electrical Engineering Massachusetts Institute of Technology Cambridge, Massachusetts	X			
Peter Derek EDMONDS Dept. of Biomedical Engineering University of Pennsylvania Philadelphia, Pennsylvania		X		
Charles EDWARDS Dept. of Physiology University of Minnesota Minneapolis, Minnesota				X
George EISENMAN Dept. of Physiology University of Utah College of Medicine Salt Lake City, Utah				X
Ellis ENGLESBERG Dept. of Biology University of Pittsburgh Pittsburgh, Pennsylvania			X	

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 TO 75	NIH GM 12257-01
David G. FLEMING Engineering Division Case Institute of Technology Cleveland, Ohio				X
Howard S. FRAZIER Cancelled Dept. of Medicine Massachusetts General Hospital Boston, Massachusetts				
Walter Henry FREYGANG, Jr. Cancelled National Institute of Mental Health National Institutes of Health Bethesda, Maryland				
Samuel Lawrence FRISHKOPF Computing & Information Research Center Bell Telephone Laboratories, Inc. Murray Hill, New Jersey				X
David Beryl GESELOWITZ Dept. of Biomedical Engineering & Medicine University of Pennsylvania Philadelphia, Pennsylvania				X
Gerhard GIEBISCH Department of Physiology Cornell University Medical College New York, N.Y.		X		
Moise H. GOLDSTEIN, Jr. Dept. of Medicine & Electrical Engineering Johns Hopkins University Baltimore, Maryland				X

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 TO 75	NIH GM 12257-01
Rita GUTTMAN Dept. of Biology Brooklyn College University of the City of New York Brooklyn, New York				X
Joseph L. HALL II Dept. of Electrical Egnineering Massachusetts Institute of Technology Cambridge, Massachusetts				X
James Daniel HARDY Dept. of Biophysics John B. Pierce Foundation Lab. New Haven, Connecticut				X
Joseph David HARRIS Dept. of Physics & Biochemistry Dartmouth College & Medical School Hanover, New Hampshire				X
Leon David HARMON Computing & Information Research Center Bell Telephone Laboratories Inc. Murray Hill, New Jersey				X
Harold G. HEMPLING Cornell University Medical College Physiology & Biophysics New York, N.Y.				X
Alan John HODGE Cancelled Dept. of Biology Division California Institute of Technology Pasadena, California				

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 T075	NIH GM 12257-01
Paul HOROWICZ Department of Physiology & Pharmacology Duke University Medical Center Durham, North Carolina		X		
David Hunter HUBEL Neurophysiology Laboratory Harvard Medical School Department of Pharmacology Boston, Massachusetts			X	
Franklin HUTCHINSON Department of Molecular Biology & Biophysics Yale University New Haven, Connecticut				X
Julian Lee KAVANAU Department of Zoology University of California at Los Angeles Los Angeles, California				X
Robert L. KAY Cancelled Department of Chemistry Mellon Institute Pittsburgh, Pennsylvania				
Alexander LEAF Department of Medicine Massachusetts General Hospital Harvard Medical School Boston, Massachusetts				X
Martin LUBIN Department of Pharmacology Harvard Medical School Boston, Massachusetts				X

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 T075	NIH GM 12257-01
Alexander MAURO Dept. of Biophysics The Rockefeller Institute New York, New York				X
Williams B. MARKS Dept. of Biophysics Johns Hopkins University Baltimore, Maryland			X	
Howard Charles MEL Donner Laboratory Dept. of Medical Physics University of California Berkeley, California	X			
George P. MOORE Cancelled Dept. of Physiology University of California at Los Angeles UCLA Medical Center Los Angeles, California				
George MOUSHEGIAN Dept. of Neurophysiology Walter Reed Army Inst. of Research Washington, D.C.		X		
Melvin Laurance MORSE Dept. of Biophysics University of Colorado Medical Center Denver, Colorado				X
Ernest PAGE Biophysical Laboratory Harvard Medical School Boston, Massachusetts				X

Name of Grantee	AEC AT(49-9) 2509	AF 9777-03	NSF C310 TO 75	NIH GM 12257-01
Jack PEISACH Albert Einstein College of Medicine Dept. of Pharmacology Bronx, New York				X
Lee D. PEACHEY Dept. of Zoology Columbia University New York, N.Y.				X
Robert PLONSEY Engineering Division Case Institute of Technology Cleveland, Ohio				X
Theodore T. PUCK Cancelled University of Colorado Medical Center Dept. of Biophysics Denver, Colorado				
Robert RIKMENSPOEL Bio-Medical Division The Population Council The Rockefeller Institute New York, N.Y.		X		
Joseph Murdoch RITCHIE Dept. of Pharmacology Albert Einstein College of Medicine New York, N.Y.		X		
Robert ROSEN Committee on Mathematical Biology University of Chicago Chicago, Illinois				X

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 TO 75	NIH GM 12257-01
Aser ROTHSTEIN Dept. of Radiation Biology University of Rochester School of Medicine Rochester, New York				X
Anthony SANCES, Jr. Dept. of Surgery & Bio-Medical Engineering Northwestern University Chicago, Illinois				X
Alexander SANDOW Dept. of Physiology Institute for Muscle Disease, Inc. New York, N.Y.				X
Gordon M. SCHOEPFLE Cancelled Dept. of Physiology Washington University School of Medicine St. Louis, Missouri				
Stanley G. SCHULTZ Bionucleonics Department USAF School of Aerospace Medicine Brooks Air Force Base, Texas			X	
Herman P. SCHWAN Dept. of Biomedical Engineering Moore School of Electrical Engineering University of Pennsylvania Philadelphia, Pennsylvania				X
William McConway SIEBERT Dept. of Electrical Engineering Massachusetts Inst. of Technology Cambridge, Massachusetts	X			

Name of Grantee	AEC AT(49-9) - 2509	AF 9777-03	NSF C310 T075	NIH GM 12257-01
William Warner SLEATOR Jr. Dept. of Physiology Washington University School of Medicine St. Louis, Missouri				X
Fred M. SNELL Dept. of Biophysics State University of New York Buffalo, New York				X
Robert A. SPANGLER Dept. of Biophysics State University of New York Buffalo, New York				X
Lawrence STARK Neurology Section Electronic Systems Laboratory Massachusetts Inst. of Technology Cambridge, Massachusetts			X	
Walter STOECKENIUS Cancelled The Rockefeller Institute Dept. of Cytology New York, N.Y.				
Felix STRUMWASSER Washington School of Psychiatry Washington, D.C.		X		
Samuel A. TALBOT Dept. of Medicine Johns Hopkins University Baltimore, Maryland				X

Name of Grantee	AEC AT(49-9)-2509	AF 9777-03	NSF C310 T075	NIH GM 12257-01
Cecil A. TAYLOR Dept. of Developmental Biology The Rockefeller Institute New York, N.Y.				X
Carlo A. TERZUOLO Dept. of Physiology University of Minnesota Minneapolis, Minnesota				X
H. TI TIEN Dept. of Chemistry Northeastern University Boston, Massachusetts				X
Vishnampet S. VAIDHYANATHAN Radioisotope Service Veterans Administration Hospital Little Rock, Arkansas			X	
Annemarie WEBER Dept. of Physiology Institute for Muscle Disease, Inc. New York, N.Y.				X
Paul WEISS The Rockefeller Institute New York, N.Y.				X
Thomas Fisher WEISS Dept. of Electrical Engineering Massachusetts Inst. of Technology Cambridge, Massachusetts				X
Torsten Nils WIESEL Neurophysiology Laboratory Harvard Medical School Dept. of Pharmacology Massachusetts, (Boston)		X		